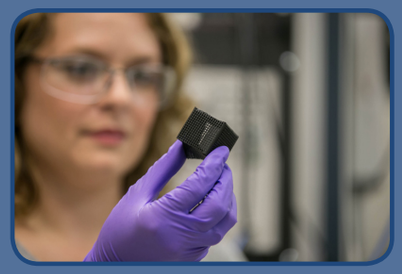
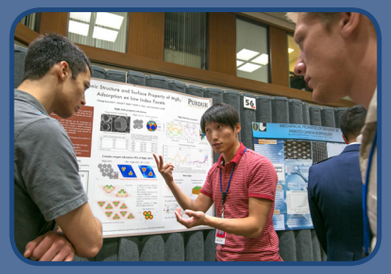
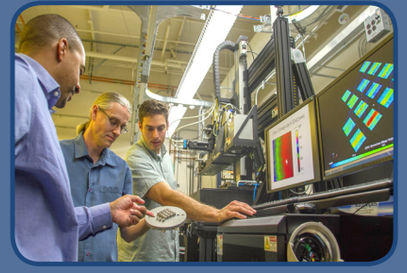
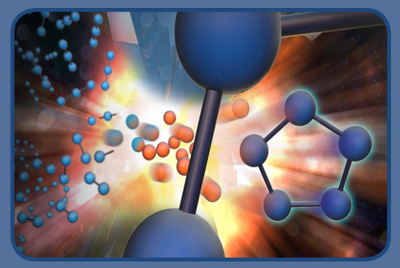
NEWSLINE

2016 YEAR IN REVIEW







LAWRENCE LIVERMORE NATIONAL LABORATORY

CONTENTS

This issue of *Newsline* was produced by the Public Affairs Office. It represents a sample of the science and technology, people and operations highlights of the year. It is available on the LLNL website.

On the cover: Various highlights of the year

Lawrence Livermore National Laboratory is operated by Lawrence Livermore National Security, LLC, for the U.S. Department of Energy, National Nuclear Security Administration under Contract DE-AC52-07NA27344

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A year of making the grade and building for the future

2016 was another year of delivering on mission obligations with award-winning science, as reflected in the Lab's end-of-the-year performance metrics. The Lab received marks of excellent in its science, technology and engineering (ST&E) objectives and an overall grade of 92 percent. This bodes well as LLNL enters its milestone 65th year.

Reflecting healthy programmatic growth and the importance the nation attaches to LLNL's national security work, 2016 also was a year of building for the future. Highlighting infrastructure improvements, the Lab dedicated two new facilities and broke ground on a third.

Addressing an acute shortage of space for siting new high performance computing systems, officials from the National Nuclear Security Administration and government representatives in June dedicated a new unclassified supercomputing facility on the Lab's east side. Earlier in the year, the Lab dedicated a new armory for the Protective Force Division that was delivered "on time and under budget." Ground was broken Dec. 16 on a new facility in the Livermore Valley Open Campus for advanced manufacturing collaboration with industry and academia.

Building on six decades of tradition, LLNL achieved mission milestones in stockpile stewardship,

NEWSLINE: LOOKING BACK AT 2016

Kim Cupps, Computing department head at Lawrence Livermore National Laboratory, gives a tour of the new computing facility.

nuclear deterrence and detection and clean energy. Standout stockpile stewardship achievements included the National Ignition Facility's record-breaking shot rate of more than 417 experiments, up from 191 in FY14, and the strides NIF researchers made in controlling shot symmetry.

Newsline's annual year-in-review edition provides a listing of events and accomplishments. Select highlights for 2016 include:

- The International Union of Pure and Applied Chemistry accepted elements 115, 117 and 118 onto the periodic table, giving element 116 — Livermorium, named for this Lab and the city — some new neighbors.
- The Laboratory hosted its first-ever ministerial visit of 37 nations for Apex Gold, a workshop to identify national and international actions to address a nuclear crisis.
- Researchers unveiled a new method to identify people using protein markers in hair. This new forensic tool has earned extensive coverage in the national media.
- For the first time, Lab physicists demonstrated how an asteroid or comet impact could have created Stickney Crater on the Martian moon Phobos without destroying it completely.
- In work that aims to protect soldiers from biological and chemical threats, a team of Lawrence Livermore scientists created a material that is highly breathable yet protective from biological agents and chemical hazards.
- The Lab won three more R&D 100 awards.
- The Lab's high performance computing capabilities will figure prominently in the Cancer Moonshot effort to double the rate of progress in cancer research and ultimately end the disease.
- The Lab unveiled i-Chip, a human on a chip that replicates the human body and could put an end to animal or human testing when developing new drugs and antidotes.
- *Forbes* ranked LLNL among the nation's top employers — the only DOE lab to make the list.
- Lab employees contributed a record amount to the HOME Campaign — $2.8 million — for local charities, or a total of $3.8 million when factoring in the Lawrence Livermore National Security, LLC match.
- The Lab continued its work to advance high performance computing with the announcement of a first-of-a-kind brain-inspired computing platform, called TrueNorth, for deep learning.

In this edition, *Newsline* looks back at 2016 with a month-by-month account of events and accomplishments in three categories: Science and technology; Operations; and People. The many awards earned by LLNL employees also are highlighted.

Immersed in day-to-day assignments, it is easy to lose sight of just how much happens at the Laboratory over 12 months. This look back at 2016 is an opportunity to step back and appreciate the collective progress to which each employee contributes.

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Lawrence Livermore National Laboratory researchers have demonstrated for the first time how an asteroid or comet could have caused the mega crater on Phobos without completely destroying the Martian moon.

A month-by-month recap

The 2016 events at Lawrence Livermore

Lawrence Livermore's *Newsline* month-by-month highlights from 2016 are listed on the following pages. Listings are in four categories:

- Science and technology
- People
- Operations
- Recognition and Awards

This 2016 Year-in-Review appears electronically; there is no print edition. The web-based format offers the advantage of providing links to the referenced *Newsline* articles, press releases or the *LLNL Report.*

Quotables

"This recognition in the R&D 100 competition is a great tribute to the innovative spirit of our scientists and engineers. Teaming with industrial collaborators is an important element in ensuring that technologies developed here will be of benefit to the nation."

- Lab Director Bill Goldstein, on the Lab winning three more R&D 100 awards

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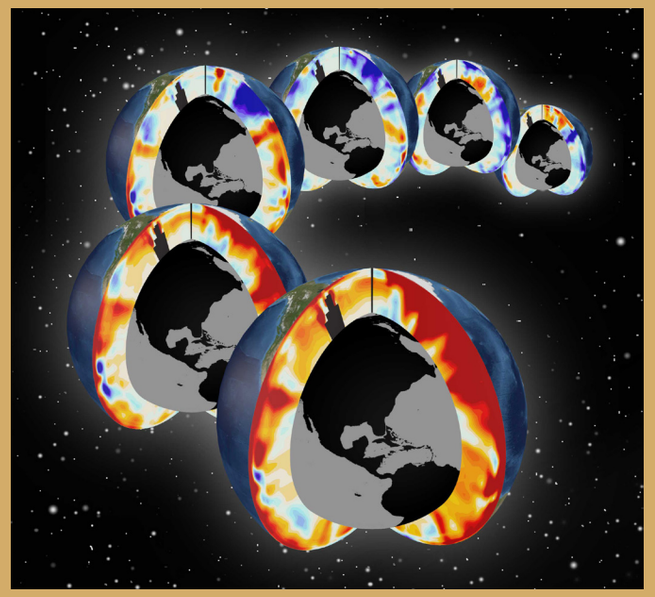
JANUARY

Science and technology

A Livermore team describes a subsurface energy system that could tap geothermal energy, store energy from above-ground sources and dispatch it to the grid throughout the year like a massive



Pacific and Atlantic southern sections showing upper-ocean warming for the past six decades (1955-2011). Red colors indicate warming and blue colors indicate cooling.

underground battery, while at the same time storing CO_2 from fossil-fuel power plants.
Read more

Nine startup company founders make their pitches to a room full of business investors and entrepreneurs at an Entrepreneurship Forum.
Read more

While the most common method of metal 3D printing is growing exponentially, moving forward from producing prototypes to manufacturing critical parts will be possible only by reaching a fundamental understanding of the complex physics behind the process.
Read more

Lawrence Livermore researchers work on 14 new grid research projects as part of the Grid Modernization Laboratory Consortium announced by Energy Secretary Ernest Moniz.
Read more

New research by Lawrence Livermore scientists shows how shock waves can damage membrane proteins in traumatic brain injury patients.
Read more

LLNL researchers create a library of nanoporous gold structures on a single chip that has direct applications for high-capacity lithium ion batteries as well as neural interfaces.
Read more

2016 Quotables

"In recent decades the ocean has continued to warm substantially, and with time the warming signal is reaching deeper into the ocean."

- LLNL scientist Peter Gleckler

The High-Repetition-Rate Advanced Petawatt Laser System, under construction at LLNL, achieves a key average power milestone more than two months ahead of schedule, and moves into the next phase in its development.
Read more

An international team of researchers reports on the first visualization of fast electron spatial energy deposition in a laser-compressed cone-in-shell fast ignition target.
Read more

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Called Apex Gold, the two-day meeting was the first ever minister-level gathering to identify potential national and international actions in the event of a nuclear crisis.

Two technologies developed by LLNL and Sandia/ California researchers who participated in the Department of Energy's LabCorps program move toward commercialization.
Read more

Ministers and other senior delegates from 37 nations, along with representatives from the International Atomic Energy Agency, Interpol, the European Union and the United Nations, gather at Lawrence Livermore for the Apex Gold meeting to discuss effective responses to a nuclear threat involving terrorists.
Read more

LLNL hosts the first LUX-Zeplin (LZ) scientific collaboration meeting of 2016 at the Livermore Valley Open Campus. The planned LZ experiment is a merger between the LUX (Large Underground Xenon) and ZEPLIN (ZonEd Proportional Scintillation in Liquid Noble gases) dark matter experimental collaboration.
Read more

People

Dawn Shaughnessy, Lawrence Livermore's principal investigator for the Heavy Element Group, fields questions from the public on the popular social media site Reddit.
Read more

Joel Bowers is selected as the Laser Systems Engineering and Operations division leader.
Read more

Annie Kersting is announced as the director of University Relations and Science Education.
Read more

Dona Crawford, associate director for Computation, announces her retirement from the Laboratory.
Read more

2016 Quotables

"Business is far more sophisticated than scientists generally believe. The scientists and engineers who participated in the LabCorps program now believe business is a real profession."

- Roger Werne, deputy director for the Lab's Industrial Partnerships Office

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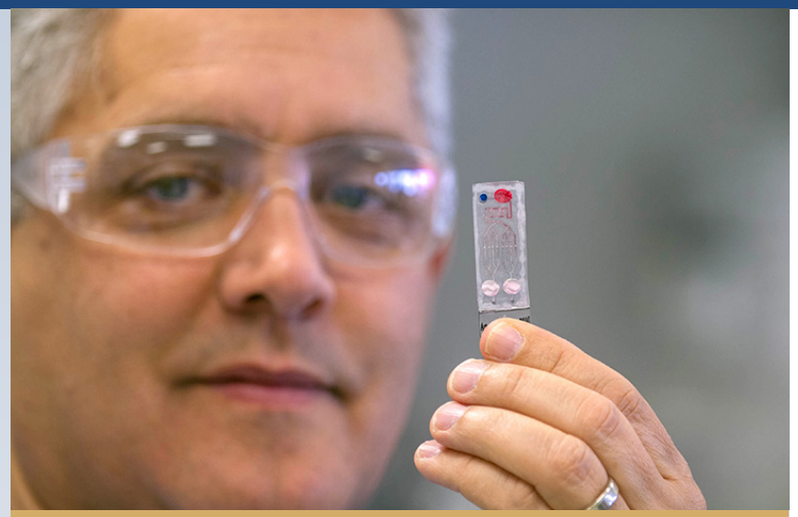

Radiobiologist Matt Coleman displays a passive flow lateral device for biodosimetry developed at Lawrence Livermore National Laboratory.

Operations

The Computation Directorate's nine divisions move into two new departments, the Computing Department and the Information Technology Department.
Read more

Livermore Information Technology opens a new training center located in Trailer 4675. This new location offers instructor-led training sessions for WebEx, Cisco Jabber and phone services.
Read more

FEBRUARY

Science and technology

Scientists from Los Alamos National Laboratory lead an experimental campaign on the National Ignition Facility designed to further understand turbulent mix models used in both high energy density and inertial confinement fusion experiments.
Read more

Researchers find that the Earth may suffer irreversible damage that could last tens of thousands of years because of the rate humans are emitting carbon into the atmosphere.
Read more

For the first time ever, scientists at Lawrence Livermore and UC Santa Cruz successfully 3D print supercapacitors using an ultra-lightweight graphene aerogel.
Read more

NASA astronauts journeying into deep space may give themselves a health checkup with the aid of a small medical device developed by a team of scientists, including one from LLNL.
Read more

LLNL planetary defense researchers find that asteroid deflection by kinetic impact is sensitive to a range of asteroid characteristics, including strength, porosity, rotation and shape.
Read more

Oceanographer Paul Durack of the Laboratory's Program for Climate Modeling and Intercomparison

2016 Quotables

"Since we don't fully understand the long-term impacts of space travel, there has been a push by NASA to better understand these effects."

– Matt Coleman, radiobiologist

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Representatives from LLNL, NNSA, DOE, Juwi Solar Inc., Western Area Power Administration and PSEG Solar Source dedicate the solar farm on the northwest corner of the Lab.

describes the importance of ocean salinity observations and needed urgent attention for the ocean observing system.
Read more

Lawrence Livermore and partners announce 10 new industry projects to advance manufacturing using high performance computing under a DOE program called HPC for Manufacturing.
Read more

LLNL researchers lead the effort to develop a neuroprosthetic system for implanting in the brains of human subjects to better understand and treat patients with Alzheimer's disease, dementia and traumatic brain injury.
Read more

Two Laboratory scientists team with Australian colleagues to author an overview of nuclear forensics, featured as the cover story in *Analytical Chemistry* magazine.
Read more

People

Laboratory physicist Scott Wilks presents "Positrons, Lasers and Robots: How Close Does Our Science Come to Asimov's Vision of the Future?" at the Livermore Public Library.
Read more

Energy Secretary Ernest Moniz visits the solar farm nearing completion on the Laboratory's west side.
Read more

The 2016 Science on Saturday lecture series featuring women in STEM kicks off with Lawrence Livermore scientist Dawn Shaughnessy and Dougherty Valley High School teacher Katherine

2016 Quotables

"Access to supercomputers in the Department of Energy's labs will provide a resource to American firms inventing and building clean energy technologies right here at home that no international competitor can match."

-David Danielson, DOE's Office of Energy Efficiency and Renewable Energy

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Director Emeritus Michael May was honored on the occasion of his 90th birthday.

Huang presenting "Behold Livermorium: A Quest for New Elements."
Read more

Lara Leininger, director of the Energetic Materials Center, succeeds Jon Maienschein in providing institutional oversight of the Explosives Safety Committee.
Read more

LLNL's Center for Global Security Research hosts a special event to honor the 90th birthday of Director Emeritus Michael May.
Read more

Longtime Lawrence Livermore Lab physicist Richard "Dick" Post, who died last April after more than 60 years at the Lab, is honored during a ceremony where former co-workers, friends and family gathered to unveil a conference room named after the fusion pioneer.
Read more

Operations

With the City of Livermore proclaiming February as Science and Engineering month, the Laboratory joins in the celebration by showcasing the scientific research with a unique month-long exhibit titled, "The Art of Science," at the Livermore Public Library.
Read more

The way employees log into their computers will change before the end of FY2016. Instead of using an Active Directory password, employees will use a smart card to log in.
Read more

Lawrence Livermore National Security signs a new agreement with the Livermore Laboratory Employee Services Association to provide employee services for another four years.
Read more

More than 200 Laboratory employees, retirees and guests attend the annual Chinese New Year

2016 Quotables

"He saw (the world) clearly, he saw the need to speak compellingly about it and he put ideas into play that we continue to debate today. That's the kind of mark that Mike May has made."

– Brad Roberts, director, Center for Global Security Research

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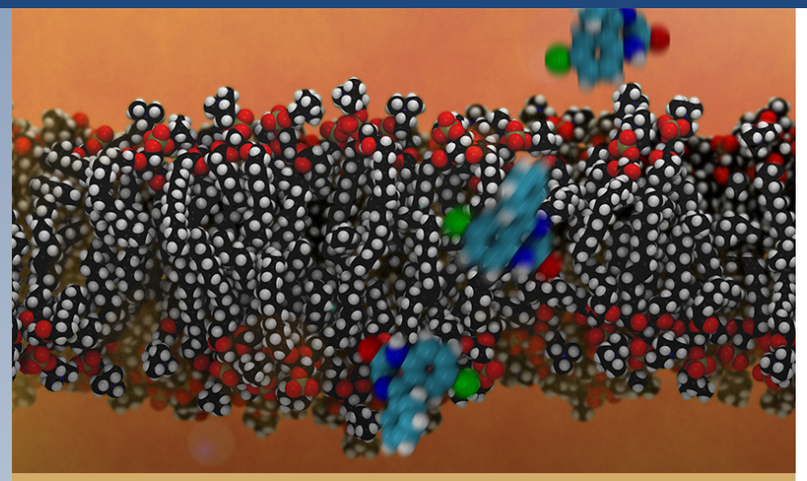

In a composite of two images, cyan-colored drug molecules are shown passing through a cell membrane.

banquet to celebrate the "Year of the Monkey."
Read more

MARCH

Science and technology

A simulation for drug-membrane permeability developed at LLNL increases the development speed for nerve-agent treatments. The simulations are run on LLNL's supercomputers, two of which — Vulcan and Sequoia — are both ranked in the top 20 of the fastest supercomputers in the world.
Read more

Laboratory researchers measure the carbon-14 isotope produced by cosmic rays in the stratosphere and find its production rate is less than previous estimates.
Read more

A team of researchers, including scientists from LLNL, provide new insight into the process of the shock-induced transition from graphite to diamond and uniquely resolve the dynamics of the phase change.
Read more

The DOE High Performance Computing for Manufacturing Program, led by LLNL and joined by its partners, Lawrence Berkeley and Oak Ridge national laboratories, designed to spur the use of high performance supercomputers to advance U.S. manufacturing, seeks a second round of proposals from industry to compete for approximately $3 million in new funding.
Read more

Material scientists at LLNL find certain metal oxides increase capacity and improve cycling

2016 Quotables

"You won't get rich from our experiments, but the shock-induced transition from graphite to diamond already has important industry applications."

– Scientist Dominik Kraus, on shock compression research

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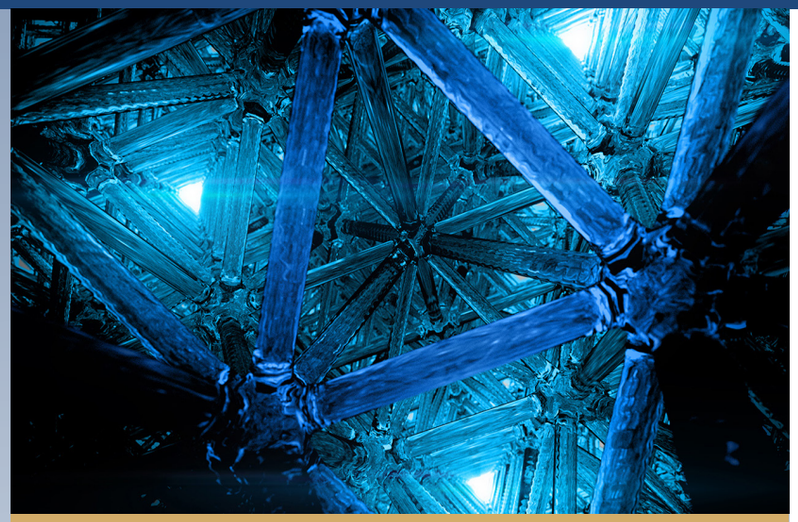

By using high performance computing combined with advanced manufacturing and additive manufacturing, researchers can design and build new devices and materials with unique physical and microstructural properties.

performance in lithium-ion batteries.
Read more

LLNL announces it will receive a first-of-a-kind brain-inspired supercomputing platform for deep learning developed by IBM Research. Based on a breakthrough neurosynaptic computer chip called IBM TrueNorth, the scalable platform will process the equivalent of 16 million neurons and 4 billion synapses and consume the energy equivalent of a hearing aid battery — a mere 2.5 watts of power.
Read more

Through experiments and computer models of gas releases, LLNL scientists simulate signatures of gases from underground nuclear explosions (UNEs) that may be carried by winds far from the point of detonation. The work helps international inspectors locate and identify a clandestine UNE site within a 1,000-square-kilometer search area during an on-site inspection that could be carried out under the Comprehensive Nuclear Test Ban Treaty.
Read more

People

Jonathan Allen, a researcher in LLNL's Global Security Program, is chosen to serve on a U.S. National Academies of Sciences, Engineering and Medicine 15-member panel to study microbiomes, or microbial communities of organisms growing in the environment, in buildings and other areas.
Read more

2016 Quotables

"The potential capabilities neuromorphic computing represents and the machine intelligence that these will enable will change how we do science."

- Jim Brase,
LLNL deputy associate director for Data Science

LLNL employee Eric Stout speaks to a Walnut Creek-based Sons In Retirement computers and technology interest group about NIF's software engineering efforts.
Read more

Holly Franz, LLNL senior scientist and 24-year veteran of the U.S. Air Force, gives the keynote speech at an event at Las Positas College honoring women veterans.
Read more

At the invitation of the U.S. Coast Guard, LLNL's Evi Dube, Erwin Lopez and Celeste Matarazzo visit the Coast Guard's Base in Alameda to share

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Lawrence Livermore electronics technologists Dale Kurita, at microscope, and Julian Larregui examine manufacturing circuits for 3D printing.

information about the Lab's cybersecurity program.
Read more

The Laboratory installs a highly advanced 3D printer for electronics, opening the door for creating miniature circuits on surfaces and substances that could never be used before.
Read more

Kathryn Zupsic, community speaker coordinator for the Fine Arts Museums of San Francisco Docent Council, gives a lively lecture about "The World of Jane Austin in Art" as part of the Women's History Month activities.
Read more

Gov. Jerry Brown's Military Council visits LLNL for tours and briefings on various Lab programs and capabilities.
Read more

Operations

More than 300 local girls attend the Laboratory-sponsored 38th annual Tri-Valley Expanding Your Horizons conference at the Las Positas Campus.
Read more

The Laboratory co-sponsors the Synopsys Alameda County Science and Engineering Fair, drawing nearly 700 student participants to compete for top honors.
Read more

LLNL earns another 'A' grade in the 2015 Organization for the Prohibition of Chemical Weapons fall proficiency test, marking the sixth straight 'A' grade garnered by Lab researchers.
Read more

LLNL participates in The American Institute of Aeronautics and Astronautics California Aerospace Days at the state Capitol. This annual

2016 Quotables

"There are unlimited capabilities in the future. This opens up a whole new door for people to look at electronics differently."

-Electronics Technologist Dale Kurita, on manufacturing circuits for 3D printing

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More than 180 underserved and mostly minority girls and boys from school districts in Oakland, San Francisco, Concord, West Contra Costa, Richmond and Tracy visited Lawrence Livermore National Laboratory as part of the White House's "My Brother's Keeper" initiative.

event provides an opportunity for the aerospace sector and its industry partners to educate state lawmakers on the importance of the aerospace industry to the California economy.
Read more

The Laboratory hosts more than 180 underserved and mostly minority boys and girls from school districts in Oakland, San Francisco, Concord, West Contra Costa, Richmond and Tracy as part of the White House's "My Brother's Keeper" initiative.
Read more

The Laboratory's popular Fun With Science program goes to Modesto, reaching more than 800 students from 12 elementary schools in Modesto and Riverbank as part of a collaboration between The State Theatre's Youth Education Program and LLNL's Education Program.
Read more

The Livermore Laboratory Employee Services Association provides findings of the work/life options survey to gauge what current services employees like most and what they would like to have offered in the future.
Read more

LLNL celebrates Women's History Month with a variety of activities throughout the month of March, honoring the theme, "Forming a More Perfect Union: Honoring Women in Public Service and Government."
Read more

2016 Quotables

"Every time I give a Fun With Science program, I'm amazed at how interested our 10/11-year-old students are in science. I believe their interest in science is enhanced by the hands-on experience. They can see the ingredients or devices used, watch the reactions and results of experiments in progress and touch the equipment being used. From this, they learn and retain the information that was presented."

- Fun With Science presenter Nick Williams

Sponsored by the Economic Development Office, the Lawrence Livermore Laboratory Women's Association's Women in Science & Engineering group hosts the fifth "Meeting of the Minds" networking event.
Read more

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More than 500 residents of the Bay Area and Central Valley flocked to the Robert Livermore Community Center for a career fair sponsored by the Laboratory.

LLNL senior leaders attend a three-day offsite meeting to discuss the Laboratory's priorities and to take actions to meet current and emerging national security needs.
Read more

LLNL holds a career fair at the Robert Livermore Community Center in Livermore in an effort to fill at least 80 jobs in areas such as information technology, environment, safety and health and management.
Read more

The Lab's Fun With Science presentation teams up with Sandia's Family Science Night program for an event at Quail Run Elementary School in San Ramon, hosted by Assembly member Catharine Baker.
Read more

The annual Good Friday protest at the Laboratory's West Gate draws approximately 70 people and closes the West Gate entrance for about 90 minutes. After ritual prayer and songs, 23 protesters chose to be arrested for blocking a public roadway.
Read more

The new armory for LLNL's Protective Force Division is dedicated in a brief ceremony, noting that construction of the new building was "on time and under budget."
Read more

2016 Quotables

"Every single hiring manager found people they were interested in. We found people for positions we've been trying to fill for more than two years. It was an amazing success."

- Engineering Recruiting and Diversity Manager Beth McCormick

APRIL

Science and technology

LLNL researchers show that carbon nanotubes as small as eight-tenths of a nanometer in diameter can transport protons faster than bulk water, by an order of magnitude, validating a 200-year-old mechanism of proton transport.
Read more

Researchers at LLNL and Yale University find that climate models are aggressively making clouds

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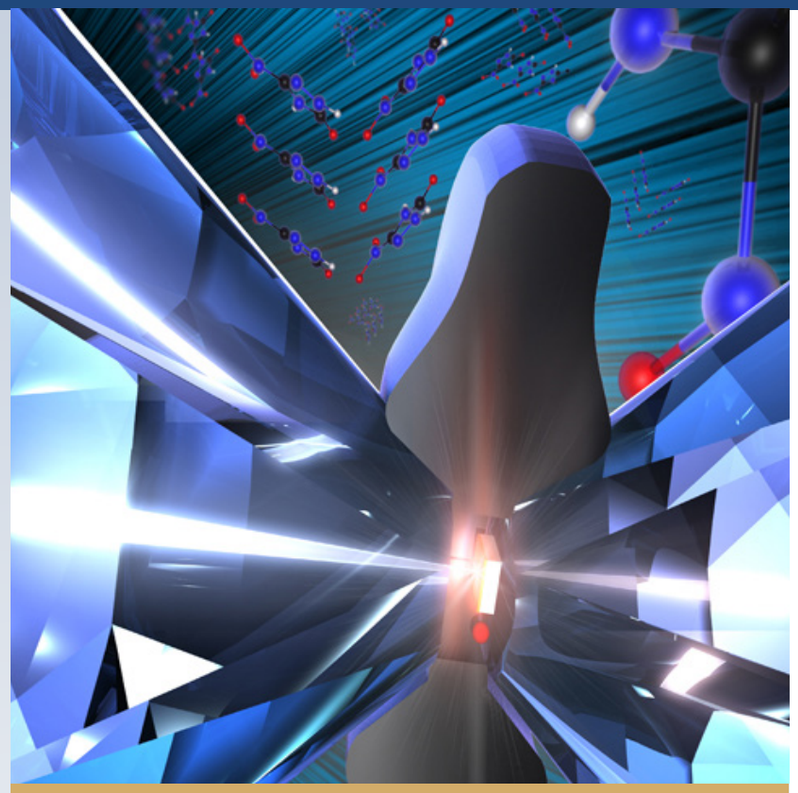

LLNL scientists developed a novel experimental approach using optical microscopy-interferometry (OMI) measurements to determine the equation of state of low-symmetry anisotropic crystalline materials.

"brighter" as the planet warms. This may be causing models to underestimate how much global warming will occur due to increasing carbon dioxide.
Read more

LLNL scientists develop a novel experimental approach using optical microscopy-interferometry measurements to determine the equation of state of low-symmetry anisotropic crystalline materials.
Read more

A team of researchers, including scientists from LLNL, aims to answer the question: What happens to hydrogen at high pressure.
Read more

Americans use less energy overall in 2015 than the previous year, according to the most recent energy flow charts released by LLNL, which illustrate the nation's consumption and use of energy.
Read more

Laboratory material scientists find that 3D-printed foam works better than standard cellular materials in terms of durability and long-term mechanical performance.
Read more

A biological detection system developed by LLNL scientists finds more than a dozen applications soon will be used in tests reaching a new frontier — outer space.
Read more

LLNL scientists and colleagues analyze the series of NIF "high-foot" inertial confinement fusion

2016 Quotables

"In fact, much of the overall decrease in energy consumption can be traced to the shift from coal to gas, because modern gas-fired plants may use up to 46 percent less energy to produce the same amount of electricity."

- A.J. Simon, group leader for LLNL's energy program

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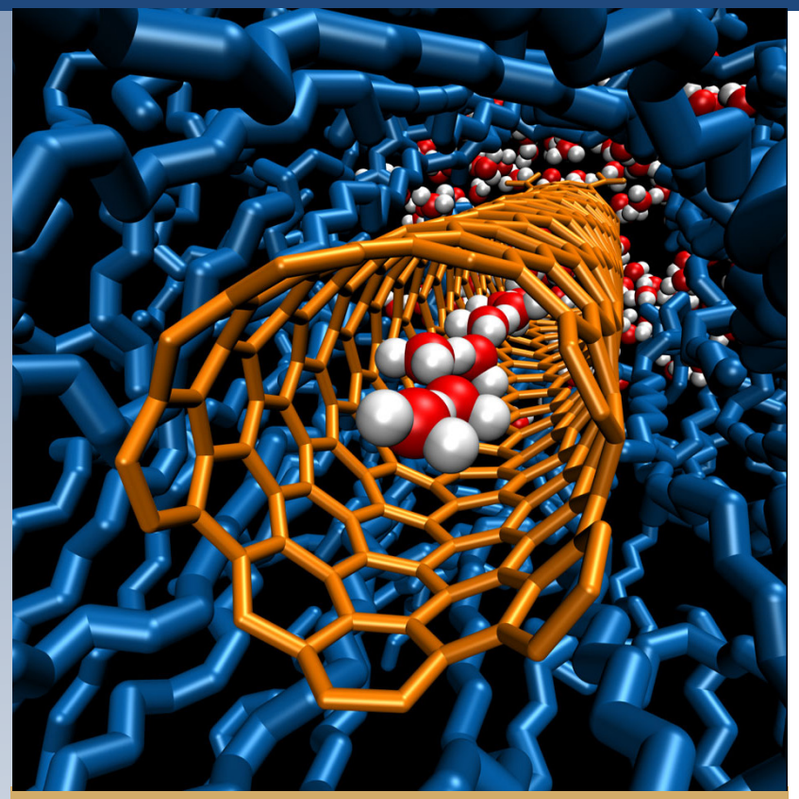

A single chain of water molecules lines the cavity inside a carbon nanotube porin, which is embedded in a lipid bilayer.

experiments that reached the highest levels of alpha heating ever achieved on any laser facility. Alpha heating, or self-heating, is a key step on the path to ignition.
Read more

People

LLNL's George Sakaldasis, deputy director for military and nuclear affairs within the Lab's National Security Office, presents a Laboratory overview briefing to the Alameda County chapter of the Military Officers Association of America.
Read more

Operations

LLNL's popular "Science on Saturday" lecture series goes to Tracy, reprising two presentations that were featured earlier in Livermore that highlight women in science, technology, engineering and mathematics.
Read more

LLNL's Office of the Chief Information Officer and Livermore Information Technology host 78 students and teachers for the fourth annual Information Technology Job Shadow Day.
Read more

LLNL is named to the 2016 *Forbes* list of America's Best Large Employers, ranking No. 102 out of 500 employers that made the cut and the only national laboratory on the list, a ranking that places LLNL among the top 10 employers in the San Francisco Bay Area and among the top 12 in government services nationwide.
Read more

Get Active, the Lab's annual health campaign co-sponsored by Working Well and LLESA/Work-Life Programs, kicks off.
Read more

2016 Quotables

"The cool thing about our results is that we found that when you squeeze water into the nanotube, protons move through that water even faster than through normal (bulk) water. Bulk water is similar to what you would find in a cup of water that is much bigger than the size of a single water molecule."

- Aleksandr Noy, an LLNL biophysicist

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Kids learn the basics of coding at a hands-on demonstration hosted by the Computation Directorate at the Take Our Daughters and Sons to Work Day.

The California Chapter of the Institute of Nuclear Materials Management hosts a "spring get together" at the Livermore Valley Open Campus.
Read more

The Laboratory hosts 600 kids for Take Our Daughters and Sons to Work Day, #LLNLKidsDay, joining their parents for a day of learning, exploring and job shadowing.
Read more

An article highlights the efforts of Lab engineers and high-voltage crews who responded to a power outage earlier in the year at the National Ignition Facility, working tirelessly to bring the facility back online ahead of schedule.
Read more

The Laboratory releases the annual report, "Science and Technology on a Mission," that summarizes the Lab's myriad achievements during fiscal year 2015.
Read more

The LLNL Library hosts its annual information fair, offering a chance for employees to see some of the valuable services the Library provides and to interact directly with representatives from more than 25 different information providers.
Read more

2016 Quotables

"I saw many smiling kids walking around with their parents exploring the Lab. Hopefully they learned a lot and will want to come back and work here someday."

- Kellie Ashton, LLESA program manager at the Take Our Daughters and Sons to Work Day

LLESA's Microcentury Toastmasters holds its annual poetry reading in honor of National Poetry Month.
Read more

Lab employees Bruce Goodwin, Bob Vince and Dave Rehbein participate in the Deterrence and Escalation Game and Review 2016 held at the U.S. Naval War College in Rhode Island.
Read more

Leaders from LLNL and Georgetown University gather at the Laboratory for a day of meetings to map out goals for the seven-year national lab/

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LLNL researcher Megan Bruck Syal examines a pair of meteorites destined to be vaporized by high-powered lasers.

university collaboration.
Read more

The Lab hosts the authors of the book "Tri-Valley Trails" in honor of Earth Day 2016.
Read more

MAY

Science and technology

In a National Ignition Facility discovery science campaign, researchers carry out a series of experiments aimed at understanding the possible role of collisionless shocks and related intergalactic magnetic fields in cosmic-ray acceleration to better understand cosmic rays.
Read more

A team of scientists, including one from LLNL, finds that the dehydration of chlorite is likely to be crucial in explaining the anomalously high electrical conductivity observed in the Earth's mantle. The new research shows that the electrical conductivity of chlorite is similar to other hydrous silicate minerals.
Read more

LLNL postdoctoral researcher Megan Bruck Syal receives space rocks that are mere months away from fulfilling their destiny. They are to be vaporized by a high-powered laser, and the data they yield on asteroid deflection could one day save the planet.
Read more

2016 Quotables

"We'll only have one shot at [deflecting an asteroid], and the consequences couldn't be higher. We do this type of benchmarking research to make sure our codes are right when they will be needed most."

-Megan Bruck Syal, member of the planetary defense team

An LLNL team plays a key role in fielding the recent Source Physics Experiment (SPE-5) detonated at the Nevada Nuclear Security Site. The SPE shots consist of a series of six underground high-explosive detonations in hard rock that are designed to improve the United States' ability to detect and identify low-yield nuclear explosions amid the clutter of conventional explosions and small earthquakes.
Read more

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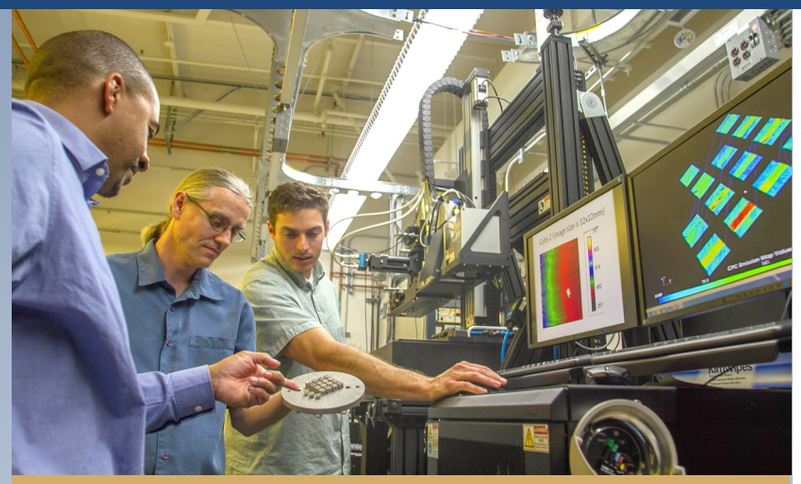

Ibo Matthews, Gabe Guss and Phil Depond examine an additively manufactured set of metal test cubes using a newly acquired laser-based powder bed fusion R&D platform from the Fraunhofer Institute in Aachen, Germany.

Around 13 times per century, Mercury passes between Earth and the sun in a rare astronomical event known as a planetary transit. The 2016 Mercury transit occurs May 9. NASA's stunning video of the transit of Mercury across the sun is made possible in part by work done by a team of LLNL scientists led by Regina Soufli.
Read more

Joint injury can lead to post-traumatic osteoarthritis. A team of scientists from LLNL, the University of California campuses at Davis and Merced and Regeneron Pharmaceuticals examine the whole-joint gene expression by RNA sequencing at one day and one, six and 12 weeks after injury.
Read more

A team of LLNL scientists begins collaborating with a New York company to improve its manufacturing process and increase the power source storage capacity of the firm's portable sensors.
Read more

Researchers at LLNL take a major step toward answering a question plaguing a common metal 3D printing technique. LLNL researcher Ibo Matthews and his team discover that gas flow, due to evaporation when the laser irradiates the metal powder, is the driving force that clears away powder near the laser's path during a build.
Read more

2016 Quotables

"Small businesses are critical to the delivery of new clean energy technologies and the national laboratories are a key source of the ideas and innovation that will develop these next-generation technologies."

- Rich Rankin, director of LLNL's Industrial Partnerships Office

People

Chris Brannan is selected as the chief financial officer for LLNL.
Read more

The 2016 LLNL Lab-Corps cohort of researchers Yongqin Jiao, Tania Ryan, Suzanne Singer and Michael Stadermann return from in-depth

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More than 50 employees attended a Women in Science and Engineering talk by Mary Ann (Mansigh) Karlsen, who shared her experiences as one of the early employees of Computation at the Lab.

entrepreneurial training at the National Renewable Energy Laboratory in Denver. An eight-week program that started in early March, the Lab-Corps national training teaches the process of moving high-impact, real-world technologies into the private sector.
Read more

Mary Ann (Mansigh) Karlsen, a computer programmer during the Laboratory's early days, visits LLNL to discuss her career and experiences. For nearly 30 years, beginning in the 1950s, Karlsen spent thousands of hours helping computational physics legend Berni Alder turn his molecular dynamics into computer code to run on LLNL supercomputers.
Read more

Lab employee Julio Friedmann serves as principal deputy assistant secretary for Fossil Energy for the Department of Energy since November 2013 on his assignment in Washington, D.C., from LLNL. He returned to Livermore in March.
Read more

LLNL researcher Mark Hart knows the reason radiation is largely misunderstood by the public. Hart is working to tackle this knowledge gap head on. He returns from South Carolina where he twice presented his talk "Radiation -- What Is Important?" – for the 137th and 138th time since 1993.
Read more

2016 Quotables

"I really cared about getting a fundamental understanding about the needs of the Lab versus the needs of the department. As an IPA (Intergovernmental Personnel Agreement) you can help in ways that are not available to Lab employees."

– Lab employee Julio Friedmann, who served as principal deputy assistant secretary for Fossil Energy for the Department of Energy

Duy-Loan Le, an accomplished, internationally known engineer retired from Texas Instruments, gives an inspirational lunchtime talk in honor of Asian Pacific American Heritage Month.
Read more

Operations

May is designated as Asian Pacific American Heritage Month (APAHM).
Read more

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Michael Chan (left), the president of ASIAN Inc., the nonprofit organization that operates the Minority Business Development Agency's San Francisco Center, and Rich Rankin, the director of LLNL's Industrial Partnerships Office, shake hands after signing an agreement to help develop minority-owned businesses.

The "energizer station" set up next to the bus stop at Vasco Road and East Avenue draws more than 180 bicycle commuters participating in Bike to Work Day.
Read more

LLNL signs a continuing Strategic Collaboration Agreement with ASIAN, Inc., the nonprofit organization that operates the Minority Business Development Agency's San Francisco Center. The agreement enables both parties to tap into resources to help develop minority-owned businesses.
Read more

DOE and its "Makers," including those at LLNL, exhibit at the 11th annual Bay Area Maker Faire, dubbed the "Greatest Show (and Tell) on Earth," at the San Mateo Event Center.
Read more

Representatives from Lawrence Livermore and 10 other national laboratories meet with Department of Energy officials, investors and academic institutions for the inaugural Laboratory-Investor Knowledge Seminar to discuss strategies to better transfer clean energy technologies from the labs to the private sector.
Read more

Lawrence Livermore National Security, LLC accepts applications for its annual Community Gift

2016 Quotables

"Makers are creators and innovators and entrepreneurs, exactly whom we seek to engage at the Department of Energy. But they might not know about the incredible capabilities of our national labs, or the many ways Makers might work with them. They might not know that the DOE is one of the largest supporters of technology transfer in the federal government, or that some 2,792 agreements existed between DOE's labs and their partners in FY14. So we're delighted to be here, joining with the Maker Movement to create, to innovate and to change the world."

—Jetta Wong,
of the Department of Energy's
Office of Technology Transitions

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Congressman Eric Swalwell congratulates veterans on their achievements and encouraged them to continue pursuing their goals while using their successes to lift up other veterans who are transitioning back into civilian life.

Program for 2016.
Read more

U.S. Marine Corps veteran Tony Diaz is among eight student-veterans honored as the first graduating class of the Engineering Technology Program for Veterans, a partnership of the Lab, Las Positas College, the Alameda County Workforce Investment Board and the nonprofit, Growth Sector.
Read more

Through a program established this year with the help of LLNL's Benjy Grover, computer science students in Brigham Young University's undergraduate big data science capstone course connect with Livermore's skilled Computation professionals and gain access to advanced supercomputing technologies.
Read more

During the director's all-hands presentation, Bill Goldstein announces that he has authorized a 1 percent Strategic Performance Bonus to be distributed in recognition of the Lab's excellent performance, as measured by National Nuclear Security Administration, in fiscal year 2015.
Read more

For the fourth year, the city of Livermore celebrates Livermorium Day in honor of the discovery and naming of element 116 on the periodic table. Hosted by Livermore Mayor John

2016 Quotables

"(The program) allowed us to build a bond we only had in our platoons or wherever we might have been. We built a brotherhood. I felt like I was deployed with these guys. It's brought us together, and it's succeeding."

– U.S. Marine Corps veteran Tony Diaz, on the Engineering Technology Program for Veterans

Marchand, the event features representatives from the Livermore Joint Unified School District and the Lab's Annie Kersting, director of University Relations and Education Programs, who presented awards to outstanding students.
Read more

JUNE

Science and technology

A team of LLNL scientists and engineers develop a "human-on-a-chip," a miniature external

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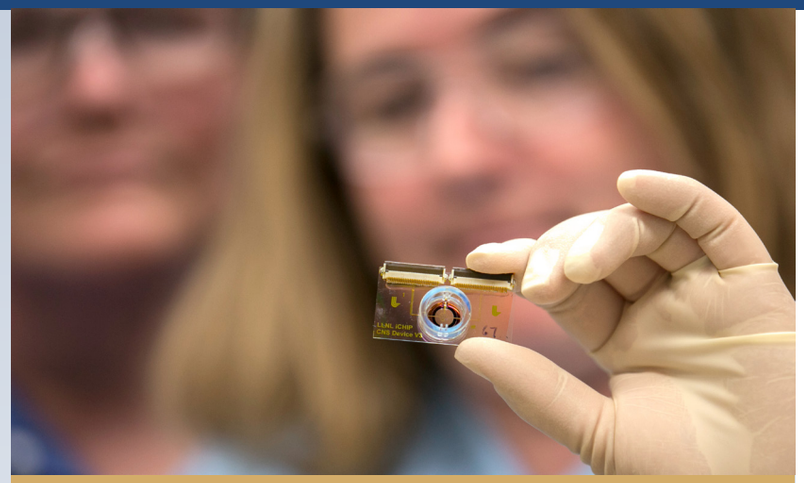

A team of scientists and engineers at Lawrence Livermore National Laboratory develops "human-on-a-chip," a miniature external replication of the human body, integrating biology and engineering with a combination of microfluidics and multi-electrode arrays.

replication of the human body, integrating biology and engineering with a combination of microfluidics and multi-electrode arrays.
Read more

Researchers from LLNL, University of California, Merced and Davis, Indiana University and Regeneron Pharmaceuticals identify a gene involved in the fracture healing process that could lead to the development of new therapeutic treatments for difficult-to-heal injuries.
Read more

LLNL researchers take to the New York City subway system to help study how a surrogate for a biological agent, such as anthrax, might disperse throughout the nation's largest rapid transit system as a result of a terrorist attack or an accidental release.
Read more

A new diagnostic built on the National Ignition Facility's roof is giving researchers a clearer picture of the neutrons released during laser-driven implosions of target capsules containing deuterium or deuterium and tritium.
Read more

LLNL scientists combine biology and 3D printing to create the first reactor that can continuously produce methanol from methane at room temperature and pressure. The research could lead to more efficient conversion of methane to energy production.
Read more

2016 Quotables

"It's a testing platform for exposure to agents whose effects are unknown to humans. If you have a system that is engineered to more closely replicate the human environment, you can skip over the really lengthy process of animal testing, which doesn't necessarily give us information relevant to humans."

-- LLNL engineer Dave Soscia, who co-leads development of the "brain-on-a-chip" device used to simulate the central nervous system

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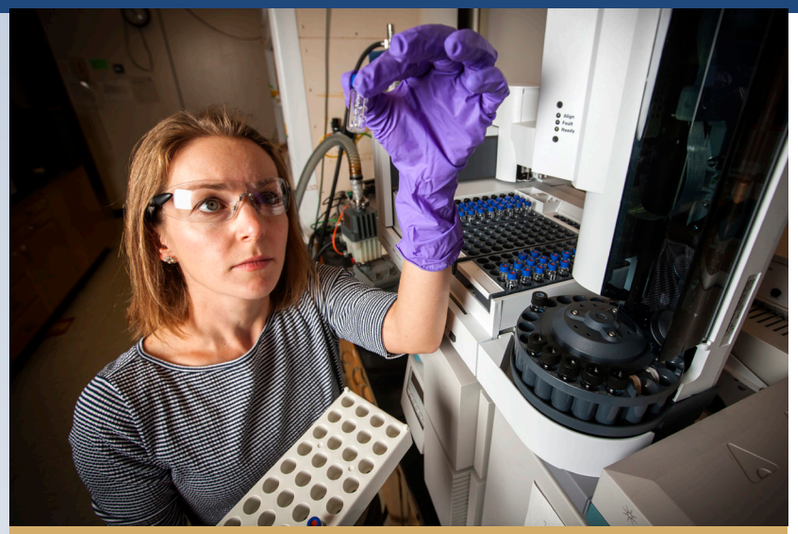

Lawrence Livermore National Laboratory chemist Sarah Baker holds a gas chromatography vial used to measure the amount of methanol produced by the enzyme-embedded polymer.

Through a series of dynamic compression experiments on additively manufactured structured lattices, an LLNL team, supported by colleagues at Los Alamos, finds that the assemblies have unique properties not exhibited by disordered cellular materials.
Read more

Vice President Joe Biden and his wife Jill Biden host the Cancer Moonshot Summit to announce several efforts to expand cancer research in hopes of finding a cure. The Cancer Moonshot is a new national effort to double the rate of progress and to ultimately end cancer. LLNL high performance computing plays a major role in the initiative; LLNL Director Bill Goldstein and Jason Paragas of Global Security attend the summit.
Read more

The latest Top500 list of the world's most powerful supercomputers is dominated by China. China now has the two top-ranked systems on the list. LLNL's Sequoia, a 20 petaflop/s (quadrillion operations per second) IBM Blue gene Q system, drops to No. 4, just below Titan, the 27 petaflop/s Cray XK7 system at Oak Ridge National Laboratory.
Read more

LLNL researchers, along with a team from UC Santa Cruz, devise a method for doubling the performance of 3D-printed graphene-based supercapacitors. The method substantially improves the capacity of the electrodes while still maintaining the devices' excellent rate capability.
Read more

2016 Quotables

"3D printing of foams offers tremendous flexibility in creating programmable architectures, customizable shapes and tunable mechanical response. Now that our work indicates superior long-term stability and performance of the printed material, there is no reason not to consider replacing traditional foam with appropriately designed 3D-printed foam in specific future applications."

--LLNL researcher Amitesh Maiti

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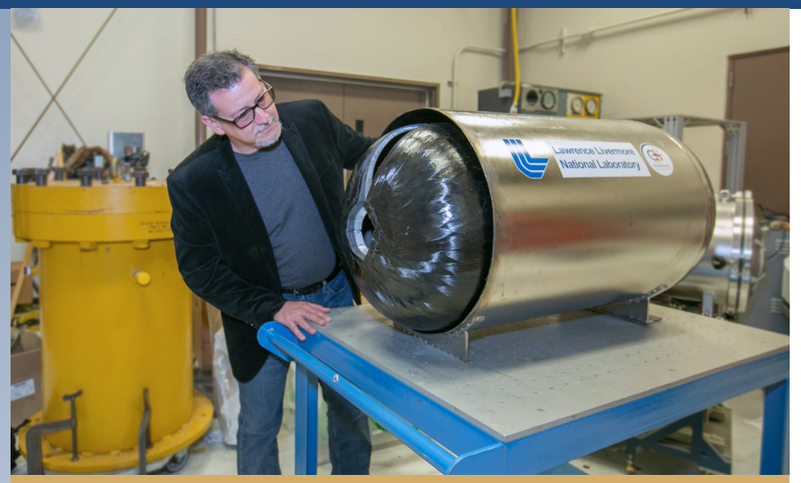

Lawrence Livermore National Laboratory engineer Brian Guidry examines his Cryo-Compressed Hydrogen Tank Technology, an advanced fuel system using hydrogen instead of fossil fuels in a combustion engine.

People

When LLNL's Daryl Boyer was asked to lend his technical expertise to help shape the future of the U.S. nuclear deterrent, he knew it meant relocating to Omaha, Nebraska, without his parents and children. Boyer is an LLNL engineer on assignment to the Global Strike Capabilities Division of the U.S. Strategic Command.
Read more

In honor of Memorial Day and to conclude the 2016 Asian Pacific American Heritage Month activities, LLNL retiree Tadashi Kishi shares his inspirational story as a WWII veteran of Japanese ancestry caught up in the internment events of the war.
Read more

Operations

The Department of Energy announces the selection of two proposals from LLNL researchers for grants under the department's Technology Commercialization Fund, a program intended to help promising energy technologies move from national laboratories to the marketplace.
Read more

Family and friends of Lab employees are invited to attend Fun With Science, hosted by the Lab's Public Affairs Office. Fun With Science is intended to spark kids' interest in science through entertaining demonstrations and hands-on activities.
Read more

2016 Quotables

"High performance computing is absolutely essential to the science and engineering that underpins our work in stockpile stewardship and national security. The unclassified computing capabilities at this facility will allow us to engage the young talent in academia on which NNSA's future mission work will depend,"

-NNSA Administrator Lt. Gen. Frank G. Klotz USAF (Ret.)

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Lawrence Livermore National Laboratory machinist Brandon Pratt works on the VMX 50 machine. He became one of the latest graduates from the Machinist Apprentice Program, a four-year on-the-job training for entry-level machinists.

Officials from the National Nuclear Security Administration and government representatives dedicate a new supercomputing facility at LLNL.
Read more

More than 80 attendees from the national laboratories, industry and academia visit LLNL's HPC Innovation Center for the 20th Annual Center for Advanced Signal and Image Sciences Workshop.
Read more

Wesley Scoggins and fellow machinist Brandon Pratt become the latest graduates from the Lab Engineering Directorate's Machinist Apprentice Program, a four-year on-the-job training for entry-level machinists.
Read more

JULY

Science and technology

Engineers achieve unprecedented scalability in 3D-printed architectures, opening the door to super-strong, ultra-lightweight and flexible metallic materials for aerospace, the military and the automotive industry.
Read more

Researchers explore the use of metal 3D printing to create strong, lightweight structures for advanced laser systems, like the network of hierarchical fractal-like metamaterials.
Read more

2016 Quotables

"With these 3D features we've been fabricating on a nanoscale, you can get some really interesting properties, but people have never been able to scale them up and see how they behave. We've figured out a strategy of hierarchically building them to take advantage of the nanoscale features but use them at a large scale. It turned out better than we could have imagined."

- Xiaoyu "Rayne" Zheng, a former LLNL technical staff member who led the study on 3D-printing scalable architectures

Evidence of climate change is found in cloud records, which show trends that are very unlikely to have been caused by natural climate variability.
Read more

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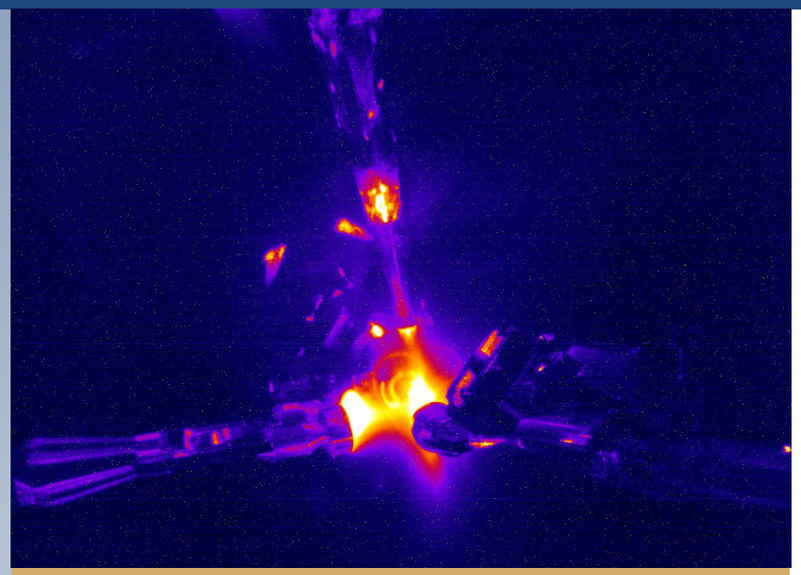

Shot-time image from a June 1 NIF experiment simulating stellar nucleosynthesis fusion reactions.

Researchers explore the use of metal 3D printing to create strong, lightweight structures for advanced laser systems — an effort they say could alter the way lasers are designed in the future.
Read more

A series of discovery science experiments on NIF shed light on the process of nucleosynthesis – how naturally occurring elements form through fusion in the hearts of stars.
Read more

Researchers successfully incorporate human nervous-system cells on a microelectrode platform for the first time, enabling long-term testing of chemical and toxic effects on cell health and function.
Read more

People

Cybersecurity expert Jamie Van Randwyk of LLNL and Sean Peisert of Lawrence Berkeley National Laboratory take the lead over a new program to develop new data analysis methods to better protect the nation's power grid.
Read more

Seven LLNL employees receive certificates in "national security affairs" from The Bush School of Government and Public Administration at Texas A&M University.
Read more

2016 Quotables

"The conditions we create in one of these implosions are very similar in density and very similar in temperature to the interior of a star."

- Nuclear physicist Maria Gatu Johnson, Plasma Science and Fusion Center at the Massachusetts Institute of Technology

Sen. John Hoeven of North Dakota visits the Lab for a weapons briefing and NIF tour.
Read more

More than 100 Laboratory students and faculty attend the annual "Meet the Director" presentation and reception providing an opportunity for students to learn more about the Laboratory.
Read more

California Council on Science & Technology Policy fellows — scientists and engineers on a one-year appointment with policymakers in the California State Legislature — visit LLNL for a day of

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At right, Greg Jones, contractor response coordinator of the Radiological Assistance Program (RAP) DOE Region 7, gives a demonstration of RAP to (left) Madelyn Creedon, NNSA principal deputy administrator and NNSA Administrator Frank Klotz.

briefings and facility tours.
Read more

NNSA Administrator Lt. Gen. Frank Klotz delivers an all-hands meeting at LLNL, providing employees with an overview of the previous six months, praising LLNL employees for their continued contributions to the department's stockpile stewardship program and collaborative work across the "broad portfolio" of NNSA projects.
Read more

Operations

A cryogenic hydrogen test facility starts operation, offering a unique platform for testing hydrogen systems over a wide range of pressures, temperatures, volumes and flow rates.
Read more

A team of LLNL employees spearheads an emergency exercise that tests the ability of national laboratories to respond to a nuclear accident and also re-establishes a national research capability that has been lost for a decade.
Read more

High school students from Orion Academy, a small private school for students with Asperger's syndrome, gain valuable experience through internships at the Lab.
Read more

2016 Quotables

"It was a lot different than I thought it would be. Having to take over this project was really important. It was creative. I had to do my own research and I learned a lot about coding that I never knew before."

- Orion Academy student Ibrahim Almaliti

Several key members of the Navajo Transitional Energy Company, LLC, visit LLNL to look at new technologies and discuss potential collaborations relative to energy and water security.
Read more

LLNL rolls out multi-factor authentication across its unclassified computers, bringing LLNL into compliance with Department of Energy IT requirements.
Read more

The LLNL Children's Center, under the auspices Livermore Laboratory Employee Services

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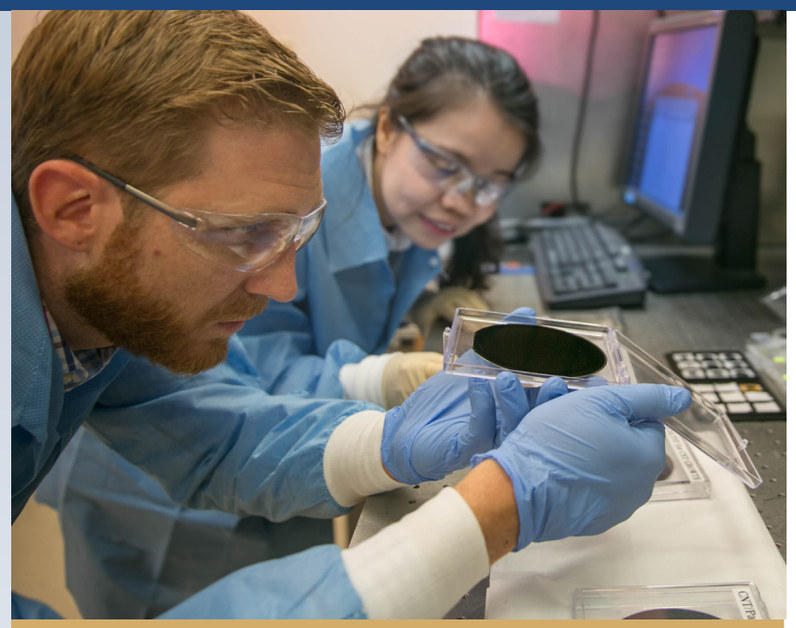

Researchers Eric Meshot, left, and Ngoc Bui evaluate the uniformity of a carbon nanotube array covering the entire area of a 4-inch wafer.

Association (LLESA), celebrates 30 years of operation.
Read more

The Global Security directorate took its scientists, technology and equipment to the Central Cafe to show students and postdocs the kinds of cutting-edge science the directorate does to support national security.
Read more

AUGUST

Science and technology

LLNL researchers create a highly breathable "second skin" material designed to protect soldiers from biological and chemical threats, the first key component of futuristic smart uniforms.
Read more

A new transmission electron microscope expands materials characterization capabilities at LLNL, giving researchers a clearer look at the atomic level of structures than they've had before.
Read more

The Department of Energy announces plans to invest $16 million to accelerate the design of new materials through the use of supercomputers. The investment will fund two projects to design fundamentally new functional materials destined to revolutionize applications in alternative and renewable energy, electronics and a wide range of other fields.
Read more

For the first time, LLNL researchers measure how forces move through 3D granular materials, like sand or rice, determining how this important class of materials might pack and behave in processes throughout nature and industry.
Read more

2016 Quotables

"The material will be like a smart second skin that responds to the environment. In this way, the fabric will be able to block chemical agents such as sulfur mustard (blister agent), GD and VX nerve agents, toxins such as staphylococcal enterotoxin and biological spores such as anthrax."

- Kuang Jen Wu, leader of LLNL's Biosecurity & Biosciences Group

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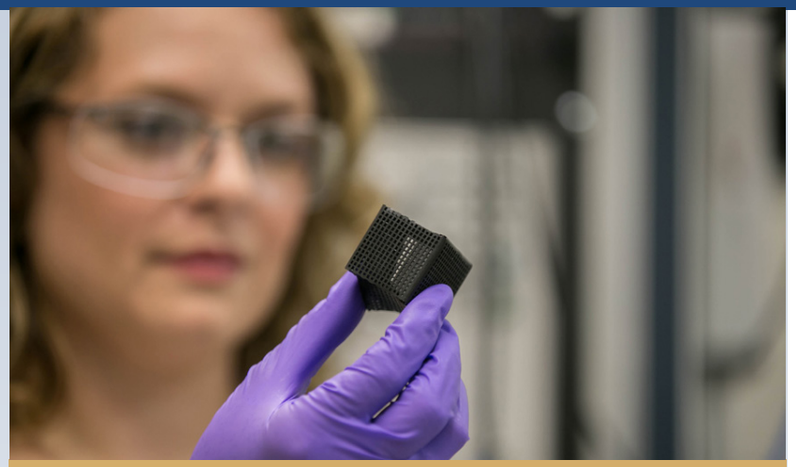

Lab researcher Jennifer Rodriguez examines a 3D-printed box that was "programmed" to fold and unfold when heated.

Materials scientists at LLNL develop a novel experimental method using pulsed ion beams to probe radiation defects in nuclear and electronic materials.
Read more

The Department of Energy funds 13 new industry projects designed to spur the use of high performance supercomputers to advance U.S. manufacturing and create an ecosystem that allows experts at DOE's national laboratories to work directly with industry.
Read more

Researchers find out that enzymes create a highly toxic form of mercury in Antarctic sea ice after examining sequence data obtained from DNA samples collected in sea ice and other Southern ocean environments.
Read more

LLNL researchers successfully 3D print shape-shifting structures — dubbed 4D printing — that can reshape themselves when exposed to heat or electricity.
Read more

Scientists discover that the well-known de-icing agent magnesium chloride ($MgCl_2$) remains stable at more than a million atmospheres of pressure.
Read more

International scientists identify the dynamics of the core of one of the most massive objects in the known universe, bringing insight into the cosmology of clusters of galaxies.
Read more

2016 Quotables

"It's like baking a cake. You take the part out of the oven before it's done and set the permanent structure of the part by folding or twisting after an initial gelling of the polymer."

- Lab researcher Jennifer Rodriguez, on 4D printing

People

Gov. Edmund G. "Jerry" Brown Jr. visits LLNL for a series of briefings on the nuclear stockpile, nuclear deterrence, foreign nuclear weapons development, counterterrorism and incident response.
Read more

Congresswoman Zoe Lofgren visits LLNL to meet with senior management and tour various facilities.
Read more

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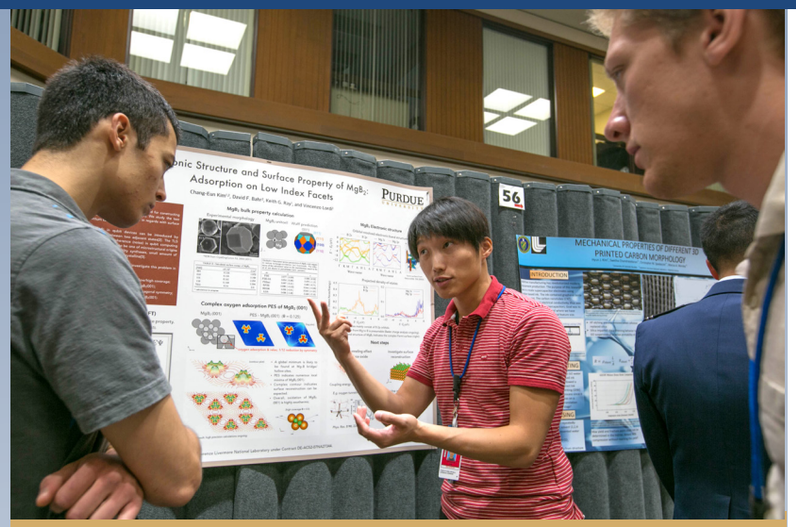

Physical and Life Sciences summer student Changeun Kim explains his project during the annual student poster symposium.

Cherry Murray, director of DOE's Office of Science and former LLNL deputy director of S&T, visits LLNL for a series of briefings on biosecurity, high energy density physics including an update on the National Ignition Facility and Jupiter Laser Facility, climate and energy and high performance computing.
Read more

Operations

Three technologies developed by LLNL researchers, and a fourth technology produced by a consortium including LLNL, are tapped as finalists for the 2016 R&D 100 awards. The awards are given annually for the top 100 industrial inventions worldwide and are sometimes called the "Oscars of invention."
Read more

More than 250 research projects are on display during the annual student poster symposium, as students from around the world share their work at LLNL as summer interns.
Read more

LLNL produces a pair of 360 virtual tours of the National Ignition Facility and three of its 3D printing labs, giving prospective employees a panoramic, behind-the-scenes look at what it's like to fire the world's largest laser, and how researchers 3D print rocket motors and living human blood vessels.
Read more

2016 Quotables

"In the latest workshop we performed and evaluated about 60,000 simulations over lunch. What would have taken about 14 days of continuous computations in 2012 was completed in 45 minutes — about 500 times faster."

- Ed Balkovich, senior information scientist at the RAND Corporation, a nonprofit research organization

The RAND Corporation joins forces with LLNL to combine high performance computing with innovative public policy analysis to improve planning for particularly complex issues such as water resource management.
Read more

A trio of postdoctoral fellows, all alumni of the Department of Energy Computational Science Graduate Fellowship Program, field questions

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Michelle Shackelford (center) discusses cybersecurity tactics with teammates Katrina Herweg and Danielle Butts as part of the challenging Cyber Defenders program offered at the Laboratory.

about their computational research at national labs on the popular social media website Reddit.
Read more

A delegation of Air Force Global Strike Command scientists visits LLNL for an overview of capabilities. The visit is part of an effort to establish an enduring partnership between DOE laboratories and the Air Force command.
Read more

Military veterans who completed engineering internships at the Lab talk about their experiences at an event at the Livermore Valley Open Campus. The 16 veterans are part of the Engineering Technology Program at Las Positas College that provides veterans with the opportunity to earn a 10-week hands-on summer internship at LLNL.
Read more

Students in the Cyber Defenders class of 2016 put the breadth of what they've learned to the test in an intensive, three-day team competition that pits them against real-world cybersecurity challenges.
Read more

The Department of Energy invests in two small businesses working with LLNL on advanced gas turbine manufacturing and geothermal engineering as part of the Small Business Voucher pilot.
Read more

2016 Quotables

"Our greenhouse gas emissions today produce climate-change commitments for many centuries to come. Today's actions — or inaction — will have long-term climate consequences for generations of our descendants."

– Climate scientist Ben Santer

SEPTEMBER

Science and technology

LLNL scientists, working with the National Oceanic and Atmospheric Administration and university colleagues, find that half of the global ocean heat content increase since 1865 has occurred over the past two decades.
Read more

The National Ignition Facility performs its 400th experiment of fiscal year 2016, meeting the year's goal several weeks early.
Read more

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Glendon Parker, a biochemist with Lawrence Livermore National Laboratory's Forensic Science Center, examines a 250-year-old archaeological hair sample that has been analyzed for human identification using protein markers from the hair.

Laboratory scientists create a new method to purify copper nanowires with a near-100 percent yield.
Read more

Scientists from Lawrence Livermore National Laboratory find that, contrary to popular belief, the Earth is not comprised of the same material found in primitive meteorites (also known as chondrites).
Read more

Laboratory physicists perform a series of calculations shedding light on an unexpected way that iron springs back to shape under dynamic compression.
Read more

2016 Quotables

"This method will be a game-changer for forensics, and while we've made a lot of progress toward proving it, there are steps to go before this new technique will be able to reach its full potential."

- Brad Hart, director of the Lab's Forensic Science Center

LLNL contributes to seven of the exascale application development projects as well as one of the "seed funding" initiatives that are part of the "Cancer Moonshot" announced by Vice President Joe Biden. Additionally, Livermore researchers play a lead role in the Precision Medicine Initiative with the National Institutes of Health's National Cancer Institute.
Read more

Researchers develop the first-ever biological identification method that exploits the information encoded in proteins of human hair.
Read more

The Department of Defense awards a team from Lawrence Livermore and UC Merced a three-year, $768,803 grant to study breast cancer metastasis.
Read more

LLNL, with UC Irvine and Synthetic Genomics, wins a two-year $485,000 grant from the National Institutes of Health (NIH) to explore new ways to develop a chlamydia vaccine.
Read more

The U.S. Department of Energy's High Performance Computing for Manufacturing program seeks a new round of proposals from industry to compete for $3 million.
Read more

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The Lab's Science Education Program hosted eight students, along with their high school science teachers, for a two-week long biotechnology intensive academy during the summer.

Incorporating magnetism and spin fluctuations in theoretical models explains the softening of the bulk modulus with temperature in delta plutonium as seen by accurate resonant ultra-sound spectroscopy measurements.
Read more

Operations

Nearly 100 men and women from organizations across the Laboratory attend the seventh "Meeting of the Minds" networking event.
Read more

The Laboratory's Science Education Program carries out another successful summer of educational and professional development programs geared to teachers and students.
Read more

The Lawrence Livermore Laboratory Women's Association Women in Science and Engineering Group host a networking event to help employees build relationships across the Lab. Mentors and mentees pair in a "speed dating" format, rotating every three minutes.
Read more

A joint experimental effort between the U.S. and U.K. achieves a pair of important milestones in support of stockpile stewardship. The Weapon Physics and Design Program leads the experiments as part of the "Sierra Nevada" series.
Read more

2016 Quotables

"Don't we want to know? There's attention now on the brain that was never there before. Let's find out what's going on. Let's support the science. Let's support the research."

—Jeanne Marie Laskas, author of the New York Times best-selling book "Concussion"

The 2016 LLNL Postdoctoral Poster Symposium convenes in early summer to showcase the research of postdoctoral staff.
Read more

People

Jeanne Marie Laskas, author of *The New York Times* best-selling book "Concussion," visits the Lab to talk about the sequence of events that led

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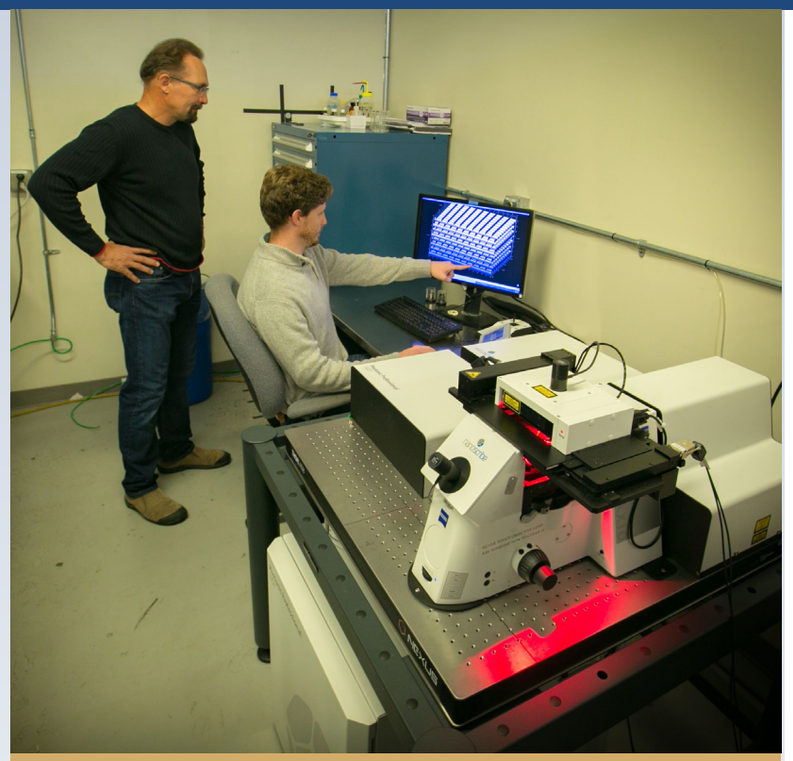

James Oakdale (seated) and Juergen Biener examine a 3D printed foam reservoir target used to test how materials behave under extreme conditions.

to her book and the subsequent Hollywood movie starring Will Smith.
Read more

Sandra Brereton is selected to serve as associate deputy director of Operations for the Laboratory.
Read more

Kim Budil gives an inspirational talk highlighting the effort to promote diversity and inclusion at the laboratories during the LLLWA annual luncheon.
Read more

OCTOBER

Science and technology

Researchers incorporate sensors into hydrogen refueling stations as a safety device that would trigger an emergency shutoff or prompt an alert when detection levels reach 2 percent.
Read more

LLNL and ASML Holding NV establish plasma simulation capabilities to advance extreme ultraviolet light sources toward the manufacturing of next-generation semiconductors.
Read more

A group, including members of Lawrence Livermore's Additive Manufacturing Initiative, develops 3D-printed materials that shrink when heated.
Read more

2016 Quotables

"Producing on-demand targets opens the door to making things you couldn't make before using traditional manufacturing."

– Researcher Juergen Biener

Lawrence Livermore scientists and collaborators develop a new technique to measure radiation dose levels using gene expression analysis of whole blood from cancer patients receiving targeted radiation therapy.
Read more

LLNL explores the use of 3D printing to achieve unprecedented flexibility in producing "on-demand" targets for testing how materials behave under extreme conditions.
Read more

Laboratory computer scientists and Norwegian researchers collaborate to apply high performance computing to the analysis of medical data to improve screening for cervical cancer.
Read more

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Lawrence Livermore scientists studied low-level stratocumulus clouds to identify their effects on global warming.

Researchers find that ECR5 is not the only element regulating the gene that controls bone mechanoadaptation.
Read more

Physicists at LLNL demonstrate how an asteroid or comet impact could have created Stickney crater without completely destroying Mars' largest moon, Phobos.
Read more

Lawrence Livermore researchers identify a mechanism that causes low clouds — and their influence on Earth's energy balance — to respond differently to global warming, depending on their spatial pattern and location.
Read more

People

Nobel Laureate Michael Levitt reflects on his life, the history of computational structural biology and his mission to help young scientists in a Director's Distinguished Lecturer Series address.
Read more

Teresa Berry serves as the new program leader for the Employee Relations Office.
Read more

Former Los Alamos National Laboratory Director Siegfried Hecker speaks about how American and Russian nuclear weapons scientists joined forces to stem some of the greatest post-Cold War dangers.
Read more

Randy Pico and Angela Tallman attend the inaugural Veterans in Energy National Leadership Summit in Washington, D.C. Veterans in Energy provides transition, retention and professional

2016 Quotables

"What was most important about this particular set of experiments is that we, the nuclear weapons scientists, got to know each other. We got to work with each other; look at each other. It was amazing how well we worked together."

- Sig Hecker, reflecting on cooperation with the Soviet Union

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Lab employee Darren Lynch speaks to Splunk vendor representatives Tracy Dawson and Brandon Stewart at the vendor expo as part of the Cybersecurity Fest.

development resources for military veterans working in the energy sector.
Read more

Operations

The Lab develops the Department of Energy's Office of Energy Efficiency & Renewable Energy Build4Scale Manufacturing Training for Cleantech Entrepreneurs (Build4Scale) program.
Read more

Fourteen postdocs compete in Research Slam! 2016, the first of what is to become an annual competition.
Read more

The Laboratory sends 37 people to the 2016 Grace Hopper Celebration, the world's largest technical conference for women in computing.
Read more

Around 250 computational physicists from Los Alamos and Sandia national laboratories and the Atomic Weapons Establishment in the U.K. gather for the bi-annual Nuclear Explosive Code Development Conference.
Read more

Lab employees attend the Cybersecurity Program's annual National Cybersecurity Awareness Month Cybersecurity Fest at the Livermore Valley Open Campus.
Read more

2016 Quotables

"Our Lab has an advantage because of where we're located, in the hotbed of innovation and Silicon Valley. I think we have a strong network and we've demonstrated that we can do it with the DOE's Lab-Corps program."

- Jeff Roberts, LLNL's deputy director for Energy and Climate

"She Believed She Could So She Did STEM," is the theme for the 24th annual San Joaquin Expanding Your Horizons (SJEYH) conference, where nearly 500 young women flock to the University of the Pacific campus in Stockton to learn more about science, technology, engineering and mathematics.
Read more

Despite the rain, hundreds of employees come out to participate in the Run for HOME, the celebratory kickoff to the 42nd annual Helping Others More

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Lawrence Livermore scientists, from left, Vladimir Tomov, Tzanio Kolev and Veselin Dobrev examine a simulation that is representative of the type of high-order methods that the Center for Efficient Exascale Discretizations will focus on.

Effectively (HOME) Campaign.
Read more

Director Bill Goldstein attends the second annual National Laboratory Directors Council Diversity and Inclusion Summit at Brookhaven National Laboratory.
Read more

Representatives from regional water service providers visit the Livermore main site to learn about Lab programs and initiatives in water stewardship.
Read more

During Lab-Corps boot camp, Lab employees Mihail Bora, Lewis Wogan, Brian Beekley and industry partner Eric Cummins learn about the commercialization process for clean-tech innovation coming out of the national labs.
Read more

NOVEMBER

Science and technology

LLNL is one of four national labs selected to lead a "co-design" center by the Department of Energy's Exascale Computing Project as part of a four-year, $48 million funding award.
Read more

A Livermore team's dramatically improved first-principles molecular dynamics code that promises to enable new computer simulation applications is one of the finalists for the 2016 Gordon Bell Prize.
Read more

A Lab team plays a key role in fielding a Source Physics Experiment (SPE-6) detonated at the Nevada National Security Site.
Read more

Livermore scientists are among those awarded funding to develop software for the Department of Energy's Exascale Computing Project.
Read more

New research by Lawrence Livermore material scientist Marcus Worsley and colleagues from UC Berkeley and Lawrence Berkeley National Laboratory shows that using the mineral perovskite in graded band gap solar cells achieves an average steady efficiency rate of 21.7 percent

2016 Quotables

"In many ways I stood on the shoulders of giants, and I consider myself to be very lucky to be at the right place at the right time."

– Nobel Laureate Michael Levitt on the scientists who would influence his career

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Researchers examine a scanning Auger nanoprobe, one of two experimental capabilities added to the Superblock this year.

for all devices.
Read more

Researchers find that new measurements of the size, age and composition of organic matter in the Pacific Ocean affects short-term and long-term climate impacts.
Read more

New research by an international team, including LLNL, shows that the present thinning and retreat of Pine Island Glacier in West Antarctica is part of a climatically forced trend that was triggered in the 1940s.
Read more

Operations

Laboratory employees can expect to see plenty of positive changes and new challenges as the Laboratory moves into its milestone 65th year, Director Bill Goldstein says.
Read more

Bolstering the effort of LLNL scientists in plutonium research, new experimental capabilities are brought online at the Superblock facility.
Read more

Lawrence Livermore National Security, LLC announces the recipients for the 2016 LLNS Community Gift Program. These gifts, totaling $100,000, reflect LLNS' commitment to local communities.
Read more

In an effort to help employees stay informed of the work-life programs and events provided by various organizations throughout the Laboratory, the Livermore Laboratory Employee Services Association (LLESA) publishes the "Work-Life at LLNL Guide."
Read more

The Security Organization enhances access procedures at LLNL entrances and for entry into limited areas.
Read more

2016 Quotables

"I am honored to thank you, on behalf of LLNS and the Laboratory, for your commitment and your service to our community. It is sincerely appreciated."

- Lab Director Bill Goldstein, at the 2016 LLNS Community Gift Program event

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Lab scientist Harold Rogers shows visitors at the Bay Area Science Festival Discovery Day how liquid nitrogen creates steam.

Livermore IT's ServiceNow portal replaces Front Range Self Service.
Read more

The 13th annual Veterans Day Lab Ride brings more than 75 motorcycles and nearly 100 people out to join in the procession, riding from LLNL to Site 300 to benefit local charities.
Read more

People

Manyalibo (Ibo) Matthews represents the Laboratory at the National Society for Black Physicists (NSBP) Fall Conference, held at Fermilab, the largest academic meeting of minority physicists in the United States.
Read more

The Laboratory participates in the Bay Area Science Festival's Discovery Day at AT&T Park in San Francisco, offering Fun With Science and interactive displays.
Read more

Tony Baylis, director of the Office of Strategic Diversity and Inclusion Programs, serves as an invited panelist at the White House Conference on Inclusive STEM Education for Youth of Color.
Read more

Eight employees from Engineering and Computation attend the National Conference for the Society of Hispanic Professional Engineers.
Read more

Jennifer Vollbrecht, LLNL project controls analyst and veteran, is profiled for her volunteer work with the United Way of San Joaquin County as part of *Newsline* coverage of the HOME Campaign.
Read more

As a part of Native American Heritage Month, Joely

2016 Quotables

"It's incredible. As soon as you walk in with them, the patients light up. Whether they're a hospice patient or a senior patient, they are so happy to see the dogs. You see them come to life. When we first walk in the room, there's sadness, and then when the dogs come in, there's all this happiness."

- Sue Marlais, who volunteers with theValley Humane Society's Canine Comfort program

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The GOES-R weather monitoring satellite with Earth in the background.

Proudfit discusses the history and current state of American Indian education in California.
Read more

LLNL Deputy Chief Information Officer Sue Marlais is profiled in *Newsline* for her volunteer work with Valley Humane Society's Canine Comfort program as part of the coverage of the HOME Campaign.
Read more

Acting Associate Director for Computation Trish Damkroger accepts a position at Intel and Kim Cupps is named interim director for the directorate.
Read more

LLNL Industrial Hygiene Group Leader Diana Larson is profiled in *Newsline* for her volunteer work with the Performing Animal Welfare Society (PAWS) as part of the coverage of the HOME Campaign.
Read more

DECEMBER

Science and technology

The University of California Office of the President awards more than $14 million in four grants and four graduate fellowships to collaborate with staff scientists at Lawrence Livermore and Los Alamos national laboratories.
Read more

2016 Quotables

"This is another great leadership example where the Lab innovated a solution to resolve a long-standing technical problem."

-Sorin Bastea, an LLNL computational physicist and project leader

Using marine sediment cores containing isotopes of aluminum and beryllium, a group of international researchers discover that East Greenland experienced deep, ongoing glacial erosion over the past 7.5 million years.
Read more

Lawrence Livermore scientists and collaborators develop a key technology for one of the instruments that are flying on board the next generation of Geostationary Operational Environmental Satellites, as part of the National Oceanic and Atmospheric Administration's space weather monitoring fleet.
Read more

Lawrence Livermore researchers develop a new kind of amplifier that could double the capacity of

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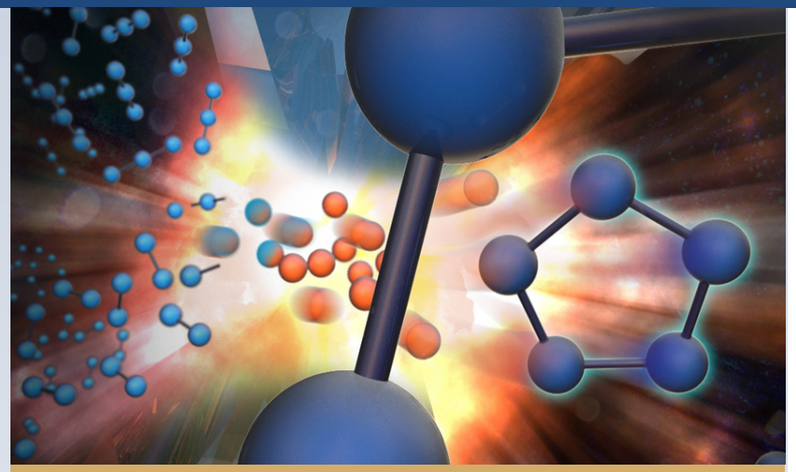

LLNL scientists synthesized a long sought-after five-ring nitrogen compound under pressure starting from a mixture of cesium azide (CsN3) and molecular nitrogen.

fiber optic cables.
Read more

LLNL scientists in collaboration with University of South Florida theorists report the synthesis and equation of state of a long sought-after five-ring nitrogen compound.
Read more

People

In the face of underserved communities and school district budget cuts, Randy Pico and Bill Dunlop volunteer to fill in local education gaps.
Read more

A group of 12 Lawrence Livermore female employees compete in the Reebok Ragnar, a 200-mile running relay race from San Francisco through Santa Rosa and Windsor and then back down to Napa, in 31 hours.
Read more

PLS Associate Director Glenn Fox, Robert Maxwell, leader of the Materials Science Division, and Thomas Yong-Jin Han, group lead for Functional Materials Synthesis and Integration, visit the Korean Institute of Materials Science in Changwon, South Korea.
Read more

Janet Iwasa, molecular biologist/molecular animator, gives a fascinating talk as part of the Work-Life Author series, sharing her background and the evolution of her scientific career.
Read more

2016 Quotables

"You get so delirious, after a certain point, that you will do the silliest things to entertain yourselves."

- Kirsten Sprott, administrative specialist for Public Affairs at LLNL on her experience participating in the Reebok Ragnar Napa Valley relay race

Calling the national labs a "critical ingredient" for the nation's productivity and economic growth, Lab Director Bill Goldstein speaks about ways U.S. industry has leveraged the "know-how" and the facilities the labs offer during a panel discussion at the Council on Competitiveness Forum.
Read more

Tamara Jernigan joins the Director's Office as senior adviser to the director.
Read more

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Mike Taranowski and Roger Lowe-Webb discuss operations security (OPSEC) with Cathy Perotti, OPSEC program coordinator, during part of the Security Awareness Month road show.

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Operations

LLNL and National Nuclear Security Administration officials, along with representatives from local government and industry, break ground on the Advanced Manufacturing Lab, a modern collaborative hub for developing next-generation materials and manufacturing technologies.
Read more

Laboratory employees, along with Lawrence Livermore National Security (LLNS), LLC, donate a record $3.8 million to charitable organizations through the Helping Others More Effectively (HOME) Campaign.
Read more

Livermore Information Technology blocks web content delivered via Flash from external websites because of web browser vulnerabilities.
Read more

LivIT displays its service status information on the front page of MyLLNL. The new "LivIT Notifications" is used to communicate broad impact unplanned IT service outages.
Read more

The "Principal Investigator (PI) Workbench" new website debuts and shows many of the agencies that provide research funding to the Laboratory as well as the internal LLNL points of contact for those agencies.
Read more

2016 Quotables

"We all have a stake in promoting the right level of security to ensure this Laboratory, our people and the work we do is well protected."

– John Lewis, Security Organization director

The flag is flown at half-staff on the 75th anniversary of Pearl Harbor.
Read more

Director Bill Goldstein issues a news column for employees on the importance of practicing and promoting security awareness as part of Security Awareness Month at the Lab.
Read more

The Laboratory's 2017 salary review kicks off. Employees will receive salary notifications in January.
Read more

The Security Organization and NIF and Photon Science Directorate sponsor a road show to various buildings throughout the Lab to showcase interactive displays with security resource literature during Security Awareness Month.
Read more

Employees flocked to the West and Central cafes to ring in the holidays during Director Bill Goldstein's annual holiday event.

PLS Associate Director and 2016 HOME Campaign Chair Glenn Fox thanks employees for their generous donations during this year's campaign.
Read more

In order to publicize career opportunities designed to strengthen sponsor relationships, the Laboratory launches an offsite assignments website to provide details about opportunities for employees to work directly with sponsors.
Read more

The ES&H Directorate launches its new "Everything ES&H" web portal, a content delivery site providing employees a one-stop point of entry to ES&H re-sources across the Lab.
Read more

The continuing resolution is signed by President Obama to fund the federal government through April 28, 2017.
Read more

Employees flock to the West and Central cafes to ring in the holidays during Director Bill Goldstein's annual holiday event.
Read more

The National Nuclear Security Administration awards National Technology and Engineering Solutions of Sandia (NTESS) with the management and operating contract for Sandia National Laboratories.
Read more

The Labs strength in science and technology once again earns excellent marks in the annual Perfor-

2016 Quotables

"I'm very proud to see our work and our dedication to our missions recognized by NNSA. This feedback speaks to our ability to meet critical national needs. I congratulate everyone on another successful year of accomplishments."

- Director Bill Goldstein, on the Performance Evaluation and Management Plan

mance Evaluation and Management Plan.
Read more

The number of LLNL's reportable incidents of security concern more than double since 2014, sparking a security awareness campaign.
Read more

Results of an employee survey conducted earlier this year by Strategic Human Resources Management in partnership with Great Place to Work, a consulting and training firm that helps organizations identify, create and sustain great workplaces are mostly positive with 80 percent of participants responding favorably to the question, "Taking everything into account, I would say this is a great place to work."
Read more

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RECOGNITION AND AWARDS

Lawrence Livermore physicist Tammy Ma

LLNL physicist **Tammy Ma** wins the American Physical Society's 2016 Thomas H. Stix Award for Outstanding Early Career Contributions to Plasma Physics Research for her "innovation and leadership in quantifying hydrodynamic instability mix in inertial confinement fusion implosions on NIF, and for key contributions to experiments demonstrating fusion fuel gains exceeding unity."
Read more

Lawrence Fellow **Aurora Pribram-Jones** is one of two recipients of the Howes Scholar award presented by the Department of Energy Computational Science Graduate Fellowship Program.
Read more

Four LLNL initiatives are recognized by NNSA with **2016 Sustainability Awards** for innovation and excellence in environmental sustainability: LLNL Green Hotline and *ES&H Newsletter*, Composting and Comingled Recycling Program, electric vehicle charging program and bike to work day.
Read more

LLNL physicist **Craig Wuest** receives one of the top civilian awards from the U.S. Department of Defense — the Office of the Secretary of Defense Medal for Exceptional Public Service — highlighting his work to strengthen nuclear survivability and his role as executive secretary for the Defense Science Board Task Force on Deterring, Preventing and Responding to the Threat or Use of Weapons of Mass Destruction.
Read more

Diablo Magazine features three LLNL researchers in their 2016 "Forty Under Forty" issue: Experimental physicist **Tammy Ma**, NIF Computing Applications Division Leader **Lisa Belk** and research engineer **Monica Moya**.
Read more

Retired Air Force Gen. **Larry D. Welch** becomes the second recipient of the John S. Foster Jr. Medal.
Read more

The Meteoritical Society honors researcher **Greg Brennecka** with the Nier Prize for his work on isotopic variations in meteorites and the chronology of the solar system, and **Carolyn Crow**, a postdoctoral researcher, with the Gordon A. McKay Award for her presentation at last year's meeting, "U-Xe Degassing Ages of Terrestrial and Lunar Impact Zircons."
Read more

LLNL's second annual Early and Mid-Career Recognition (EMCR) Program taps 15 Lab scientists

RECOGNITION AND AWARDS

Lab physicist Peter Beiersdorfer makes an adjustment on the Electron Beam Ion Trap (EBIT).

and engineers. The recipients include **Jonathan Allen, Tom Arsenlis, Reg Beer, Celine Bonfils, Nerine Cherepy, Eric Duoss, Tom Guilderson, Kelley Herndon Ford, Crystal Jaing, Vince Lordi, Pierre Michel, Lisa Poyneer, Steven Ross, Eric Schwegler and Tayyab Suratwala.**
Read more

The American Physical Society (APS) selects Lawrence Livermore researchers **Adam Bernstein, Omar Hurricane, Hui Chen and James Trebes** as 2016 fellows.
Read more

Two teams of LLNL scientists, one for technology work and the other for a partnership, receive regional awards for technology transfer from the **Federal Laboratory Consortium**.
Read more

The Institute of Electrical and Electronics Engineers' Nuclear & Plasma Sciences Society selects Lawrence Livermore National Laboratory researcher **Wayne Meier** as the recipient of the 2016 Fusion Technology Award.
Read more

The Laboratory Astrophysics Division of the American Astronomical Society selects LLNL researcher **Peter Beiersdorfer** as the recipient of the 2016 Laboratory Astrophysics Prize.
Read more

Energy Secretary Ernest Moniz awards the first Office of Defense Nuclear Nonproliferation fellowship in honor of the late **Ian Hutcheon**, a longtime nuclear forensics expert at Lawrence Livermore National Laboratory, to **Thomas Gray.**
Read more

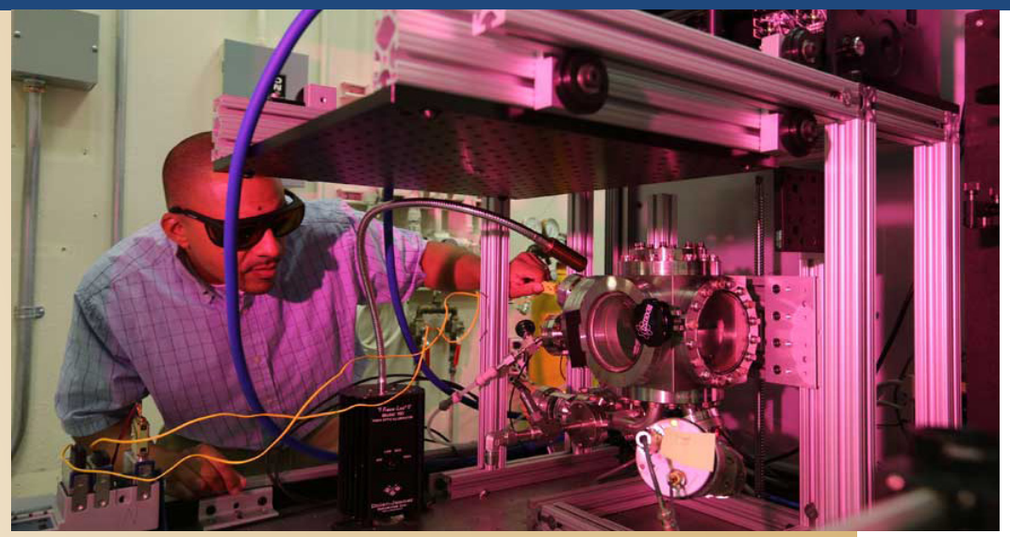
LLNL physicist **Tammy Ma** is selected for a 2016 Presidential Early Career Award for Science and Engineering, one of 106 recipients nationwide and one of 13 from the Department of Energy.
Read more

Lawrence Livermore researchers garner three awards among the **top 100 industrial inventions** worldwide for 2016.
Read more

Livermore is honored with a **Gold 2016 Optimas Award for Recruiting** from *Workforce Magazine,* recognizing the Lab for excellence in its military internship programs.
Read more

For its ongoing efforts to raise money for local charities through the **Helping Others More Effectively (HOME) Campaign**, the Lab receives the Outstanding Corporate Philanthropy Award for 2016 from the East Bay Leadership Council.
Read more

RECOGNITION AND AWARDS



Ibo Matthews inspects an in situ diagnostics test bench his team developed for studying laser-driven powder bed fusion additive manufacturing.

Lawrence Livermore energy guru **Julio Friedmann** is honored with the Greenman Award by the Greenhouse Gas Control Technologies conference series.
Read more

Physicist **Manyalibo (Ibo) Matthews** is elected as a fellow of the Optical Society for his "outstanding contributions and sustained leadership in the field of high-power laser-induced damage science, laser-material interactions and processing and vibrational spectroscopy-based materials characterization."
Read more

The Department of Energy names two LLNL scientists among the winners of the prestigious DOE Office of Science's Early Career Research Program awards: **Felicie Albert and Karis McFarlane**.
Read more

LLNL chemist **Dawn Shaughnessy** is named No. 9 on *Fast Company's* Top 100 Most Creative People in Business for 2016. Shaughnessy is the principal investigator of the Heavy Element Group.
Read more

LLNL Director **Bill Goldstein** receives the Director of the Year Award for fiscal year 2015 from the Department of Energy's Office of Small and Disadvantaged Business Utilization. He is honored for encouraging and promoting collaborations with small businesses at LLNL.
Read more

The Weapons and Complex Integration Principal Directorate holds its **Gold Awards** ceremony to recognize the exceptional innovation and excellence of two efforts. WCI Principal Associate Director Charlie Verdon presents the awards to one team and one individual at the biannual awards ceremony.
Read more

The Optical Society of America announces LLNL engineer **Corey Bennett** as one of its 2016 class of senior members, recognizing him for his accomplishments in the field of optics and photonics.
Read more

Eighteen teams, which include 17 Laboratory employees, are presented with **Excellence Awards** by James J. McConnell, associate administrator, National Nuclear Security Administration's Office of Safety, Infrastructure & Operations (NA-50) for demonstrating extraordinary achievements on key intra-laboratory projects.
Read more

The American Welding Society selects a team of Lawrence Livermore Lab researchers as recipients of its **McKay-Helm Award** for advancing the knowledge of low-alloy steel,

RECOGNITION AND AWARDS

Recipients of the 2016 scholarship awards are (from top left): Deborah Dennison, Steven Grace, Adam Conour, Jill Casey, Steven Fuchs, Katrina Trujillo, Roberta LoGrandé, Manuel Jimenez, Myrna Gutierrez, Derrick Lassle, Julie Jackson, Dona Crawford (keynote speaker) and Jennifer Bevill.

stainless steel or surfacing welding metals.
Read more

The **Lawrence Livermore Laboratory Women's Association** presents its annual scholarship awards totaling $11,900 to 13 recipients.
Read more

Laboratory Director Bill Goldstein presents three **R&D 100 awards** — one to an individual engineer (**Bryan Moran**) and two to research teams — during a ceremony sponsored by the Industrial Partnerships Office, which coordinates the Lab's entries for the R&D 100 awards.
Read more

The Global Security Principal Directorate holds its biannual **Gold Awards** ceremony to recognize outstanding contributions and one-time achievements that are above and beyond the demands of normal job performance.
Read more

LLNL is honored with the inaugural **"Founder's Award"** by the Innovation Tri-Valley Leadership during the annual #GameChangers Awards for business and technology leaders who epitomize the spirit of Innovation Tri-Valley.
Read more

The Commandant of the U.S. Coast Guard bestows LLNL nuclear engineer **David Trombino** with a Certificate of Merit for his efforts to establish a preventative radiation and nuclear detection program in the Bay Area.
Read more

Christopher Barty, the chief technology officer for the National Ignition Facility and Photon Science Directorate, wins the 2016 SPIE Harold E. Edgerton Award for his work on ultrafast lasers and laser-based X-ray and gamma ray science.
Read more

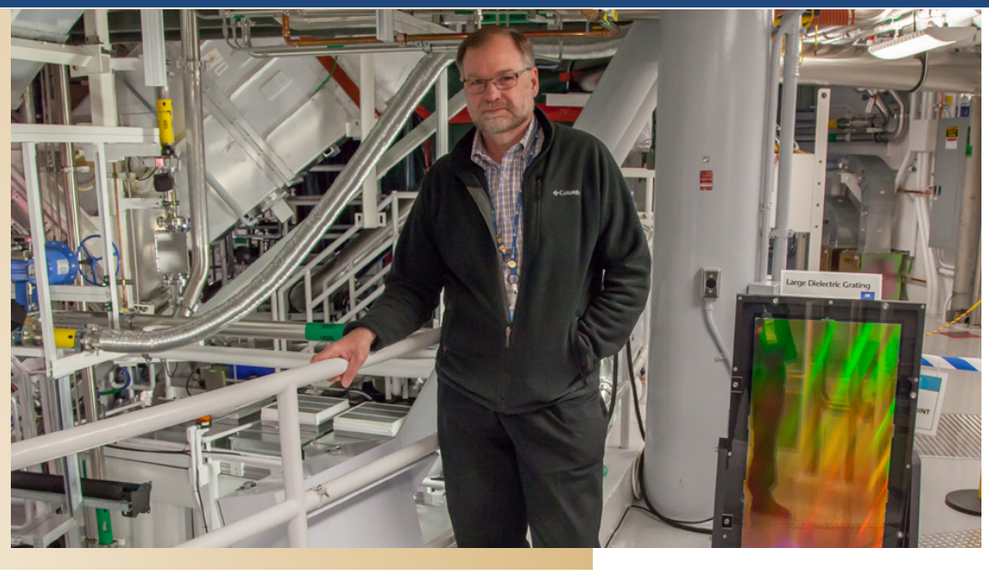
A team of LLNL researchers is honored with the **Neill Griffiths Award**, recognizing the most significant contribution to shaped-charge technology. The research helped solve a challenge Shell International Exploration and Production faced: how to sever the connection between an offshore drilling rig with the seabed in case of an emergency.
Read more

A paper published in the November 2014 issue of *Chemical Research in Toxicology* is chosen as one of 16 editors' **"Favorite Articles"** from all papers published in CRT over the past two years. In the paper, researchers used AMS to track microdoses of carcinogens as they move through the body.
Read more

Lab research engineer **Andy Pascall** takes home a "Best Presentation" award for his talk at the WMRIF 5th International Workshop for Young Scientists in Tsukuba City, Japan.
Read more

Ben Santer wins an award for his climate science work from a foundation known as

RECOGNITION AND AWARDS



Chris Barty stands near the ARC petawatt laser system at the National Ignition Facility.

"Climate Generation: A Will Steger Legacy," at the ClimateGen10 event in Minneapolis, Minnesota.

The Fusion Power Associates Board of Directors presents LLNL's **Joe Kilkenny** the 2016 Leadership Award. He is cited for "the leadership provided for inertial confinement fusion for nearly four decades, including pioneering work on hydrodynamic instabilities, opacity, thermal and suprathermal electron transport and advanced diagnostics at major laser facilities."
Read more

Chris Barty, chief technology officer in the NIF & Photon Science Directorate, is named a 2017 fellow of the Institute of Electrical and Electronics Engineers for his contributions to ultrahigh-intensity lasers and the advancement of X-ray and gamma-ray science.
Read more

Sgts. Matthew Tirone and Russell Kulina of LLNL's Protective Force Division earn Top Gun honors in the Department of Energy firearms training.
Read more

Karen Feifarek and Lupe Dorado are recognized by the Security Organization and Weapons and Complex Integration with an "Eagle Eye" award for preventing what could have been a significant, though inadvertent, security violation.
Read more

Ray Smith, a member of the Field Intelligence Element IT staff, is awarded a Security Organization's "Eagle Eye" award for his diligence in questioning something found in his work environment that seemed out of place, and for demonstrating a high level of security awareness.
Read more

The Defense Advanced Research Projects Agency names Lawrence Livermore engineer and physicist **Vincent Tang** as a Program Manager of the Year for 2016, recognizing him for leading a program involving multiple agencies to develop and deploy networked sensors for dynamic, real-time radiological and nuclear threat detection over large urban areas.
Read more

A paper by Lawrence Livermore National Laboratory researchers was chosen as the "Editor's Pick" in a recent issue of the journal ***Optics Express*** for describing an experimentally simple method for enhancing the mechanical properties of acrylic-based materials obtained through two-photon lithography.
Read more